

into the open water. In these insects respiration appears to take place in the usual way, through spiracles. A common house-fly, placed under water, ceased to move in half an hour, while the specimens now referred to lived under water for several hours without suffering any apparent inconvenience, and one was observed to be quite lively after having been so placed at least twelve hours, which, it was stated from further observation, is probably about the limit of their endurance. Drawings of the two insects accompanied the paper, which also contained an account of their organization.

*On the Appearances of Cotton-fibre during Solution and Disintegration.* By CHARLES O'NEILL, F.C.S.

These experiments referred to the application of Schweizer's solvent. Two strengths were used: the weaker contained oxide of copper equal to 4.3 grains metal per 1000, and 47 grs. dry ammonia; the stronger contained 15.4 grs. metal and 77 grs. dry ammonia per 1000. The latter is about the most concentrated solution which can be made. Referring to the researches of Payen, Frémy, Peligot, Schlossberger, and others who have employed this solvent, the author said the only experimenter who seemed to have worked in the same direction with himself, and that apparently only to a small extent, was Dr. Cramer, whose paper he had only been able to see in a translation appended as a note to a memoir of M. Payen in 'Comptes Rendus,' vol. xlvi. p. 319.

Mr. O'Neill considers that cotton exhibits, under the action of this solvent (1) an external membrane distinct from the true cell-wall or cellulose matter; (2) spiral vessels situated either in or outside the external membrane; (3) the true cell-wall or cellulose; and (4) an inner medullary matter. The external membrane is insoluble in the solvent, and may be obtained in short hollow cylinders by first acting upon the cotton with the dilute solvent so as to gradually remove the cellulose, and then dissolving all soluble matters by the strong solvent. If the strong solution is first applied, the extraordinary dilatation of the cellulose bursts the external membrane, and reduces it to such a state of tenuity that it is invisible. This membrane is very elastic, appears to be quite impermeable to the solvent, and, when free from fissures, protects the enclosed matter from its action. It is not seen in cotton which has been submitted to the action of bleaching agents, being either chemically altered or, what is most probable, entirely removed.

The spiral vessels are unmistakeably apparent, running round the fibre in more or less close spirals, sometimes single, sometimes double and parallel, and at other times double and in opposite directions, or again seemingly wound close and tight round the cylinder. They are well seen in the spherical swellings or beads, but are prominent at the points of strangulation of long ovals formed when the ends of the fibres are held tightly. They collect in a close mass, forming a ligature, and are frequently ruptured, the ends projecting from the side of the fibre.

The cellulose is enormously dilated by the weaker solvent, and expands the external membrane into beautiful beads, which are doubtless the result of the spiral vessels acting as ligatures at the points of strangulation; at the open end of a fibre it can be seen oozing out as a mucilaginous substance. The stronger solution bursts the beads, or dissolves all the cellulose into a homogeneous mass, amidst which the empty cuticular membrane and the spiral vessels remain nearly unacted upon.

The substance called medullary matter is seen occupying the axes of the fibres; it is nearly insoluble in the solvents. It may be well seen projecting from the open end of a fibre where the cellulose is exuding, and often remains *in situ* when the fibre has quite disappeared. It has many appearances of being a distinct body, but the author in some cases thought it might be only the thickened or modified inner cell-wall; in others it looked like a shrunk membrane, probably the dried-up primordial utricle. It is generally absent or indistinct in old cotton, or cotton which has been submitted to bleaching agents.—*Proceedings of the Literary and Philosophical Society of Manchester*, April 1863.

*On a singular Malformation of the Beak and Foot in the Young of the Domestic Fowl.*

“DEAR SIR,—With this I send you the body of the chicken I spoke to you about, the beak and feet of which bear a close resemblance to those of a Parrot, and I beg your acceptance of it.

“It may perhaps be as well if I state the circumstances which, it has occurred to me, may account for this freak of nature. I had one of the Parrot tribe, which, on account of the noise it made, was frequently placed in the yard where I kept a breed of white bantam fowls. If any of these came near the Parrot’s cage to pick up the food it scattered, it became much enraged and screamed violently. Soon after this I set two hens on eggs, and in each brood I had one chicken of this strange form. My impression at the time was, and now is, that one of the hens had been frightened by the Parrot, and an effect thereby produced on some of her eggs.

“When I first mentioned it to you, I thought it had but three toes; on closer inspection I perceive there is a fourth toe; but the form of the foot still very closely resembles that of a Parrot.

“Yours very truly,  
“W. M. HORN.”

“P.S. The Parrot was never let out of the cage, and was, I believe, a female.”

“J. E. Gray, Esq., British Museum.”

—*Proc. Zool. Soc.* Feb. 24, 1863.  
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